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# Feasibility and usefulness of online virtual training of urology residents in times of COVID-19: A single-center experience and an evidence-based strength, weakness, opportunity, and threat analysis

Tushar Aditya Narain, Ankur Mittal, Vanya Singh, Vikas Kumar Panwar

## Abstract:

**BACKGROUND:** The COVID-19 disease has resulted in an almost complete shutdown of all services worldwide. Hospitals continued to provide emergency services and treatment for COVID-19 disease. Teaching hospitals like ours had another responsibility at hand; training of our surgical residents. Not allowing this pandemic to take away months of training, we resorted to online virtual training programs, for continuing academic activities. After having conducted thirty such sessions, we took feedback from the participating students and faculty members to evaluate the usefulness of this new initiative and identify the lacunae that needed to be addressed.

**MATERIALS AND METHODS:** The initial twenty classes were held on the GoTo Meeting® online platform, whereas the last ten were conducted using the Google Meet application. A 20-item questionnaire covering four broad domains of general perception, feasibility, knowledge gained, and drawbacks was circulated, and 19 responses were registered anonymously. Strength, weakness, opportunity, and threat analysis was done based on the responses received.

**RESULTS:** About 89.5% of the participants believed that online classes were the ideal platform for continuing education and 84.2% of the participants were overall satisfied with the whole exercise. The Achilles' heel was the availability of a good Internet connection, and the major lacunae were the poor quality of video and audio transmission. Seventy-four percent of the participants wanted to continue online training in the future too, whereas 26% wanted to revert to the traditional face-to-face teaching.

**CONCLUSION:** Online virtual training classes are an effective and feasible alternative to traditional teaching in times such as these, which demanded strict social distancing. It naturally lacked the warmth and personal touch of the traditional teaching classes, but it allowed us to continue teaching our residents and also prepare them to face the biggest menace of all times.

## Keywords:

COVID-19, online classes, surgical training, strength, weakness, opportunity, and threat analysis, urology training, virtual training

Department of Urology,  
All India Institute of  
Medical Sciences,  
Rishikesh, Uttarakhand,  
India

## Address for correspondence:

Dr. Vikas Kumar Panwar,  
Department of Urology,  
All India Institute of  
Medical Sciences,  
Rishikesh - 249 203,  
Uttarakhand, India.  
E-mail: vikaspanwar.dr@gmail.com

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## Introduction

COVID-19, the worst pandemic since the Spanish Flu of 1918, has created havoc in the life of every individual on this

planet, disrupting all services worldwide. Our Prime Minister announced for a "Janta Curfew," a voluntary lockdown for 14 h on March 22, to instill a sense of social distancing, as a measure to curtail the

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spread of the virus. This pilot initiative assessed the mood of the masses and paved the way for a complete lockdown of 1.3 billion people of India, effective from midnight of March 25, 2020. The whole nation came to a complete standstill with all educational institutions shut indefinitely across the country. Medical institutions/hospitals stopped all routine services to meet the challenges in the management of multitudes of COVID-19 affected individuals.<sup>[1]</sup> We, as health-care workers, set out on a war footing to fight the epidemic and draft policies for preparedness to face the enormous challenge ahead.

### The matter at hand

Ours being a teaching hospital, providing balanced health-care services to our patients was not the only task we had at hand. We have 12 residents in training in our department, and their continued training in these times was also a major concern for us. Training them in patient care, surgery, and urology, with most of them being locked up in their homes, was a major challenge, which we took up, for we owed it to them. The pandemic was an enigma, with no end in sight, and we could not afford to let months pass by without imparting any training to our residents.

The lockdown caught us off guard, and we were all at sea when it came to continuing the training schedule of our students. An emergency meeting of all faculty members was called for, and all unanimously took a decision to initiate academic sessions and training on an online platform from the very same day. We briefly oriented the students and with some initial hiccups, we set off on a new venture of “online virtual training classes for urology residents”. After having conducted thirty such sessions, we took feedback from the participating students and faculty members to evaluate the usefulness of this new initiative and identify the lacunae that needed to be addressed. We also did a strength, weakness, opportunity, and threat (SWOT) analysis for this new platform of imparting education based on our findings.

## Materials and Methods

### The model

Online classes and webinars are in vogue today, and some have even called them the next pandemic.<sup>[2]</sup> The original SARS-CoV-2 pandemic has kept 1.2 billion children in around 186 countries away from classrooms, leave alone the various professional courses.<sup>[3]</sup> Online classes are the only solution to continue imparting education while maintaining a safe social distance and protecting oneself from this deadly virus. While it has been adopted by almost all schools in our country who are continuing to impart education and has been quite successful and well appreciated, the same might not be true for the training of surgical residents. This stems from

the fact that surgical training involves case presentations/discussion for planning treatment, multidisciplinary meetings and decision-making for optimum patient care, and learning of steps of surgeries by observing/assisting during actual surgical operation in the operating rooms. Nevertheless, during this COVID-19 situation, this was the only resource available at our disposal, and we adopted the virtual online platform for continuing training of our residents as soon as the lockdown was announced. The classes involved case presentations with virtual patients, seminars, journal club presentations, combined urology-nephrology rounds, combined urology-nuclear medicine rounds, and some classes taken by experts in their fields from different parts of the country [Figure 1]. The initial twenty classes were held on the GoTo Meeting® online platform, whereas the last ten were conducted using the Google Meet® application. After completing thirty such sessions, we decided to assess the perception of the attending residents and faculty members regarding the effectiveness and feasibility of the online virtual training classes. We prepared a 20-item questionnaire covering four broad domains of general perception, feasibility, knowledge gained, and drawbacks of the program [Annexure 1]. The questionnaire was independently validated by three researchers and the content validity index of the questionnaire was 1. The Institutional Ethics Committee approval was obtained before initiating this study.

### Data acquisition and analysis

The validated questionnaire was circulated among faculties and residents electronically and the responses were registered anonymously. Descriptive statistical tools were used to analyze the responses received. Descriptive statistics involved the use of measures of central tendencies, namely the mean, median, and mode. The questionnaire was sent out to 12 residents and seven faculties, and a response was received from all of them ( $n = 19$ ).

## Results

### General perception

All participants felt the need to continue training and academic sessions during this pandemic. About 89.5% of the participants believed that online classes were the ideal platform for continuing education, whereas 10.5% of the respondents felt that reading textbooks at home was a more suitable option. About 84.2% of the participants were overall satisfied and happy with the whole exercise [Figure 2].

### Feasibility of online classes

This was the first instance when we were resorting to a virtual platform for imparting training, and hence, some technical glitches were naturally expected and

encountered. Nevertheless, after some minor initial hiccups, most of us soon became comfortable with the interface. Sixteen respondents said that they had no problems with logging onto the online teaching platform, whereas the remaining three faced some minor glitches. When asked to compare these classes to traditional face-to-face teaching in terms of ease of access and give a rating on a scale of 0–10, three respondents rated online classes 5 or below, whereas the rest 16 gave a score higher than 5. The median score for ease of access was 7, so was the mode for this set of responses. For the quality of interaction that was possible virtually, when compared to traditional classes, the median score was 7. Only two respondents rated the quality of interaction in online classes to be <5. Most of the respondents felt that it was easy for them to raise a query and get it clarified. The median score was 8, so was the mode for this set of responses [Table 1].

Fifteen respondents were able to attend more than 75% of the classes, and the most common reason for not being able to attend for the rest was the lack of access to an Internet connection. One respondent mentioned

that it was too much of an effort to log in into the online platform, whereas another did not find it beneficial. Another respondent reported that the timing was not suitable, hence he could not attend all the lectures. When asked about the feasibility of continuing online classes even after the pandemic ended, most of the attendees felt that they could continue with online training in the context of availability and quality of good Internet connection [Table 2].

Seventy-four percent of participants wanted to continue with online training in the future too, whereas 26% wanted to revert to the traditional face-to-face teaching. Some individual comments regarding the feasibility of online classes are mentioned in Table 3.

**Knowledge gained**

All participants were of the opinion that they felt benefitted with the online classes, and everyone gave a score of more than 5 [Table 4]. The median and mode for this response was 8. When compared with traditional face-to-face teaching in terms of gain of knowledge, the scores dwindled a little, with one participant giving a score of 1, another a score of 3, and two participants giving a score of 4. The median and mode for this response came down to 7, which we believe is natural and expected. This platform was new to everyone, hence we wished to know how well the students comprehended the topic being discussed. Thirty percent of the respondents gave

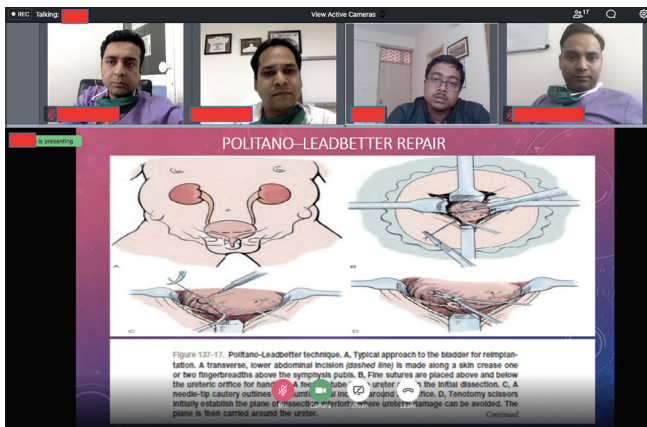


Figure 1: Online class in progress using GoTo Meeting © software

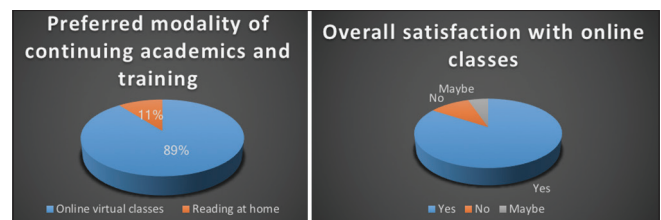


Figure 2: A preferred modality for continuing academic sessions and the overall satisfaction among attendees

**Table 1: Questions and the individual scores for assessing feasibility of online classes**

Questions	Response									
	1	2	3	4	5	6	7	8	9	10
On a scale of 1-10, how do you compare the online virtual classroom teaching with live lectures in terms of ease of access?	-	-	-	1	2	2	6	3	3	2
On a scale of 1-10, rate your quality of interaction during online virtual classroom teaching in comparison to face-to-face traditional classes?	-	-	-	1	1	1	10	3	2	1
On a scale of 1-10, how easy was it for you to raise a query and get it clarified during online virtual classroom teaching?	-	-	-	1	1	2	5	7	3	-

**Table 2: Questions and the individual scores for assessing feasibility of online classes**

Questions	Response									
	1	2	3	4	5	6	7	8	9	10
How feasible would it be to conduct online classes in future, even after the pandemic ends, in terms of availability of Internet connection?	-	-	-	1	2	1	2	3	4	5
How feasible would it be to conduct online classes in future, even after the pandemic ends, in terms of quality of Internet connection?	-	-	-	-	4	2	2	3	4	3

a score of <5. The median for this response was also 7. When it came to the retention of the matter taught, the online classes fared poorly as compared to face-to-face teaching for 47% of the respondents who gave a score of 5 or below. The median score was 6, whereas the mode was 5.

### Drawback

The last domain of our questionnaire focused on the lacunae and the pitfalls in our new endeavor. Majority of the respondents (58%) were of the opinion that the quality of the videos of the presenter and the videos played during teaching were not good. This was probably a result of the latency between the transmission of audio and video signals. Ten percent of the respondents felt that the whole exercise was very boring and tedious, whereas a few others felt that the whole exercise was very time taking. Finally, the attendees were asked to narrate why they perceived this form of teaching to be inferior to the traditional teaching, if they felt so, and most of them echoed the fact that the quality of interaction and the transmitted audio and video were not appropriate due to poor Internet connection. The reduced interaction resulted in reduced involvement in the classes, which culminated in a lesser degree of comprehension and retention of the subject. Some respondents felt that

**Table 3: Individual comments from attendees regarding their perception of online classes**

Participant	Comments
P 1	Best part is everyone who is not in hospital can also be involved in academics in virtual class Faculty out of station can also join Other institutes' faculties can easily join and guide us
P2	Better online platforms and software are in the making
P5	Can be a good option to keep evening academic attendance at par with morning attendance, especially for beneficiaries busy in work stations Also to have academics in a comfortable way makes a difference in level of interaction and scientific content
P7	Internet connection quality in hospital premises is often not up to the mark. Residents might face difficulty in access
P14	Sometimes when Internet connectivity is poor, it is difficult to hear the questions asked, chatbox can be used more frequently to ask questions which can be answered later on

the lack of bedside teaching and imparting clinical examination skills were conspicuous by their absence. Only theoretical knowledge could be shared on online platforms, which constitutes but only a minor part of the training schemata for surgical residents. Some also felt the chalk and board teaching allowed a much better understanding of the subject.

### Discussion

#### Data synthesis: Evidence-based strength, weakness, opportunity, and threat analysis

Strength, Weakness, Opportunity, and Threat or the SWOT analysis, as it is more popularly referred to, is a management tool used originally by organizations or individuals to identify strengths, weaknesses, opportunities, and threats related to business competition or project planning.<sup>[4]</sup> However, this tool has been used lately by various academicians to highlight the strength and weaknesses of various educational and training programs.<sup>[5]</sup> We did a SWOT analysis for an online virtual training program for surgical residents using the responses we obtained from our study participants [Table 5].

The concept of e-learning was not something very novel, and several institutes in India had already been using them. The importance of integrating e-learning in medical education and the importance of technology were long realized by the Medical Council of India, and it has included the use of electronic means in the broad competency "Lifelong learner committed to continuous improvement of skills and knowledge."<sup>[6]</sup> The TUSK platform, developed by Tuft's University, is being used by St. John's Hospital, Bangalore, and Christian Medical College, Vellore, to strengthen their distance learning programs for undergraduates and medical interns working in rural areas.<sup>[7]</sup> The General Medical Council of the United Kingdom, in its charter, has too, laid down that medical graduates should be able to "make effective use of computers and other information systems, including storing and retrieving information."<sup>[8]</sup>

In the era of smartphones, tablets, and computers, training and teaching had already gone beyond the

**Table 4: Questions assessing and the individual scores for knowledge gained from online classes**

Questions	Response									
	1	2	3	4	5	6	7	8	9	10
On a scale of 1-10, how benefitted do you feel with virtual online classroom teaching?	-	-	-	-	-	3	4	5	3	4
On a scale of 1-10, how do you compare the virtual online classroom teaching with traditional face-to-face teaching in terms of gain in knowledge?	1	-	1	2	1	3	3	3	2	3
On a scale of 1-10, how do you rate the comprehension of a topic discussed in virtual online classroom teaching as compared to traditional face-to-face teaching?	-	-	1	3	2	2	3	3	3	2
On a scale of 1 to 10, how do you rate your retention of the subject taught during virtual online classroom teaching as compared to traditional face-to-face teaching? (5 being retention in both forms of classes the same)	-	-	-	3	6	1	2	4	1	2

**Table 5: Strength, weakness, opportunity, and threat analysis for online virtual training program**

<b>Strengths</b>	<b>Opportunities</b>
Allows continuation of academics while maintaining social distancing – COVID safe	Universal access to smartphones, tablets, and computers
Flexibility in time and location of access	Widespread availability of wired broadband Internet connection
Sessions can be recorded to be viewed at a convenient time	Availability of improved online platforms for online meetings
Expert faculties from around the globe can be brought in on the same platform – Cosmopolitan in nature	Increased awareness regarding online meeting platforms
Attendees have access to books and online journals while attending classes	
Improved attendance and participation	
Discussion among attendees over text without disturbing the presenter	
Integrates audio-visual teaching	
<b>Weaknesses</b>	<b>Threats</b>
Dependency on computer/tablet/smartphone	Reversion to traditional classes once the pandemic ends
Dependency on good Internet connection	Security and safety of personal information: threats from cyber crimes
Latency between video and audio transmission	Increasing resentment among professionals due to a sudden surge in webinars, stemming from FOMO
Poor interaction among presenter and audience	
Multiple participants talking at the same time	
Inability to teach bedside clinical skills	
Inability to teach surgical skills	
Psychological hindrance: Unwillingness to adopt something new	
FOMO= Fear of missing out	

traditional classrooms and traditional textbooks. The COVID-19 pandemic just gave a push to this underdog and brought it in the limelight, as it allowed teaching to continue, while maintaining a safe social distance, which was and is the need of the hour. Although Ni in her study on comparing the effectiveness of classroom teaching with online teaching mentioned that online teaching would not be an ideal platform for training the medical graduates, times like the present situation, are unprecedented, and the online virtual training program allowed us to continue with the training of our residents, albeit the teaching of surgical skills and patient care were missing.<sup>[9]</sup>

## Conclusion

We, humans, are a group of resilient species. The SARS-CoV-2 virus has created havoc worldwide and has killed millions, yet we somehow managed to continue providing excellent health-care services and fight this deadly pandemic. Surgical training of our residents was our responsibility, which we strived to deliver, with all sincerity, and with whatever resources we had in these testing times. Online virtual training classes for our residents were an effective and feasible alternative to traditional teaching in times such as these, which demanded strict social distancing. It naturally lacked the warmth and personal touch of the traditional teaching classes, but it allowed us to continue to train our residents and also prepare them to face the biggest menace of all times, defeat the SARS-CoV-2, and hopefully emerge triumphant 1 day. We hope that the experience of continuing the teaching program on an online virtual platform and its evidence-based SWOT

analysis would be helpful in improving this form of teaching activity in the future in an effective and student-friendly manner.

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## Conflicts of interest

There are no conflicts of interest.

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